

What is claimed is:

1. A clutch device for a magnetic recording/reproducing apparatus, comprising:

5 a rotating centrical shaft installed on a main chassis;

a driving pulley installed to the rotating cetrnical shaft, rotating by receiving a power of a driving source and having a cylindrical pulley holder portion;

10 an up/down gear having a cylindrical gear holder unit having an outer diameter smaller than an inner diameter of the pulley holder portion and ascendant/descendable along the rotating centrical shaft; and

15 a clutch spring placed between the inner surface of the pulley holder portion and the outer surface of the gear holder unit and selectively transmitting a power with a certain torque from the driving pulley to the up/down gear in accordance with the rotational direction of the driving pulley.

2. The device of claim 1, wherein the clutch spring has a coil spring structure.

3. The device of claim 1, wherein the end of the clutch spring is contacted to the inner surface of the pulley holder portion, and the other end of the clutch spring is contacted to the outer surface of the gear holder unit.

4. The device of claim 1, wherein the clutch spring includes an outer contacting portion producing fraction by contacting to the inner surface of the pulley holder portion, an inner contacting portion producing fraction by contacting

to the outer surface of the gear holder unit and a connecting portion connecting the outer contacting portion and the inner contacting portion.

5. The device of claim 4, wherein the connecting portion is formed so as to have the number of windings less than those of the inner contacting portion and the outer contacting portion.

6. The device of claim 1, wherein certain portions of the pulley holder portion and the gear holder unit are formed so as to project out toward the clutch spring in order to contact with the clutch spring.

7. The device of claim 1, wherein the gear holder unit includes an outer cylindrical portion having an inner diameter larger than an inner diameter of the pulley holder portion and connected to the pulley holder portion.

8. The device of claim 1, wherein the driving pulley and the up/down gear respectively include an engaging means in order to rotate together by being meshed with each other when the up/down gear is transferred toward the driving pulley.

9. The device of claim 8, wherein the gear holder unit includes an outer cylindrical portion having an inner diameter larger than an inner diameter of the pulley holder portion and connected to the pulley holder portion, and the engaging means includes two engaging ribs respectively projected from the outer cylindrical portion and the driving pulley so as to face each other.

10. The device of claim 1, wherein the driving pulley and the up/down gear respectively include a movement restriction means restricting the up/down gear not to moving over a specific range when the up/down gear moves in a direction separated from the driving pulley.

11. The device of claim 10, wherein the movement restriction means is respectively projected from the driving pulley and the up/down gear in order to be engaged each other as a hook structure.

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12. The device of claim 10, wherein the driving pulley has a cylindrical bridging portion projected out into the gear holder unit, and the movement restriction means hitch the bridging portion and the gear holder unit as a hook structure.

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13. The device of claim 1, wherein the up/down gear is constructed with a gear unit having a large gear and a small gear and the gear holder unit, and the gear unit and the gear holder unit are combined with each other.

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14. The device of claim 13, wherein a boss portion is formed at the center of the gear unit, the large gear is formed at a disc-shaped portion extended from the boss portion, and the small gear having a diameter smaller than a diameter of the large gear is formed at the side of the disc-shaped portion.

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15. The device of claim 13, wherein a cylindrical holder supporting

portion is formed at the other side of the gear unit so as to support the gear holder unit.

16. The device of claim 13, wherein the gear holder unit is constructed  
5 with an inner cylinder portion and an outer cylinder portion, the clutch spring is contacted to the inner cylinder portion, and an engaging rib is formed at the outer cylindrical portion.

17. The device of claim 16, wherein the inner cylindrical portion has a  
10 hook structure so as to engage with the driving pulley.

18. A driving pulley of a clutch device for a magnetic recording/reproducing apparatus, comprising:

a pulley body formed as a disc shape and a belt is wound around the  
15 outer circumference;

a boss portion combined with a rotating central shaft;  
a bridging portion projected so as to restrict a movement of an up/down  
gear;

a pulley holder portion at which a clutch spring is contacted to its inner  
20 surface; and

an engaging rib combined with an up/down gear so as to rotate together;  
wherein

the boss portion, the bridging portion, the pulley holder portion and the  
engaging rib are formed as a cylindrical shape and orderly placed from the center  
25 of the pulley body.

19. A clutch spring of a clutch device for a magnetic recording/reproducing apparatus, comprising:

an inner contacting portion formed at a certain portion, contacted to an  
5 up/down gear and having respectively lots of the number of windings;

an outer contacting portion placed at the other portion, contacted to a  
driving pulley and having respectively lots of the number of windings; and

10 a connecting portion connecting the inner contacting portion and the outer  
contacting portion and having the number of windings less than those of the inner  
contacting portion and the outer contacting portion.

20. The device of claim 19, wherein a diameter of the inner contacting  
portion is formed so as to be smaller than a diameter of the outer contacting  
portion.

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